



PATENT
Docket No. 243132000105

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Patty Hartogs
Signature

PATTY HARTOGS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

LLOYD M. SMITH et al.

Serial No.: 08/484,340

Filing Date: 07 June 1995

For: AUTOMATED DNA
SEQUENCING TECHNIQUE

Chg. Paul Tran
Examiner: P. Tran

Group Art Unit: 1807

GROUP 180

PM 5:25

**INFORMATION DISCLOSURE
STATEMENT UNDER 37 C.F.R. § 1.97**

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

The references listed below were previously cited in an Office Action dated April 13, 1994, directed to the grandparent application Serial Number 07/898,019 (filed 06/12/92). Copies of the references were also previously included in the prosecution file and therefore, copies are not included herewith. This protocol conforms with 37 C.F.R. § 1.97 and M.P.E.P. 609(A)(2). The Examiner is requested to make these references of record in the application. The references include:

Prober et al., "A system for rapid DNA sequencing with fluorescent chain-terminating dideoxynucleotides" Science (1987) 238:336-341.

Brumbaugh et al., "Continuous, on-line DNA sequencing using oligodeoxynucleotide primers with multiple fluorophores" Proc. Natl. Acad. Sci. USA (1988) 85:5610-5614.

Matthews et al., "Analytical strategies for the use of DNA probes" Anal. Biochem. (1988) 169:1-25.

The references listed below were previously disclosed in an Information Disclosure Statement dated March 21, 1995, directed to the parent application Serial Number 08/361,176 (filed 12/21/94). Unless otherwise noted, copies of the references were also previously submitted and therefore, copies are not included herewith. This protocol conforms with 37 C.F.R. § 1.97 and M.P.E.P. 609(A)(2). The Examiner is requested to make these references of record in the application. The references include:

International (PCT) Patent Publication No. WO 83/03260 (09/29/83).

European Patent Application No. 070687 (01/26/83).

European Patent Application No. 097341 (01/04/84).

Japanese Patent Publication No. 49-126395 (12/03/74). An English translation was previously included herewith.

Barrio, J.R. et al., "Fluorescent adenosine and cytidine derivatives" Biochem. Biophys. Res. Comm. (1972) 46(2):597-604.

Eshaghpour, H et al., "Specific chemical labeling of DNA fragments" Nucl. Acids Res. (1979) 7(6):1485-1495.

Fiddes et al., "Isolation, cloning and sequence analysis of cDNA for the I-subunit of human chorionic gonadotropin" Nature (1979) 281:351-356.

Guo et al., "New rapid methods for DNA sequencing based on exonuclease III digestion followed by repair synthesis" Chem. Abstr. (1982) 97:162 (abstract no. 1521k).

Husimi, Y., "DNA Sequencer" Oyo Buturi (1982) 51(12):1400. An English translation of the abstract is also included.

Husimi, Y. et al., "Automation and Testing of DNA Base Sequence Determination Methods" Development of Physical Means of Measurement and Software for Informed Macromolecular Analysis (March 1984) pp. 20-25. An English translation was previously included.

Secrist, J.A. et al., "Fluorescent modification of adenosine 3',5'-monophosphate: Spectroscopic properties and activity in enzyme systems" Science (1972) 175:279-280.

Stanley et al., "A different approach to RNA sequencing" Nature (1978) 274:87-89.

Tsuchiya, M. et al., "Developments of DNA fluorescent labeling and real-time fluorescent detection gel electrophoresis methods" Biophysics (1982) 22:2-E-19. An English translation of the abstract was previously included.

Ulanov et al., "Electron microscopic determination of guanosine localization in DNA" Chem. Abstr. (1967) 67:1692 (abstract no. 17910c).

Wada, A., "DNA" Japan Science and Technology (1983) 24(#221):84-91. A partial English translation was previously enclosed. A complete English translation is now included herewith.

The references listed below were previously disclosed in a Supplemental Information Disclosure Statement dated July 11, 1995, directed to the parent application Serial Number 08/361,176 (filed 12/21/94). Unless otherwise noted, copies of the references were also previously submitted and therefore, copies are not included herewith. This protocol conforms with 37 C.F.R. § 1.97 and M.P.E.P. 609(A)(2). The Examiner is requested to make these references of record in the application. The references include:

Cotrufo et al., "High sensitivity method for fluorofore detection in gradient polyacrylamide slab gels through excitation by laser light: Application to glycoproteins stained with concanavalin A-fluorescein isothiocyanate" Anal. Biochem. (1983) 134:313-319. This reference was listed in a related Japanese application.

European Patent Application No. 0068875 (01/05/83). This reference was listed in a related German application.

Gilbert, "DNA-sequenzierung und gen-struktur (Nobel-Vortrag)" Angewandte Chemie (1981) 93:1037-1046. The undersigned has also enclosed a copy of the English version, as published in Science (1981) 214:1305-1312, based on the same Nobel Lecture.

International (PCT) Patent Publication No. WO 83/02277 (07/07/83). An English abstract is included on page 1 of this patent publication. This reference was listed in a related French application.

Japanese Patent Publication No. 59-93100 (05/29/84). A partial English translation was previously enclosed.

Maxam et al., "A new method for sequencing DNA" Proc. Natl. Acad. Sci. USA (1977) 74:560-564. This reference was listed in a related Japanese application.

Maxam et al., "Sequencing end-labeled DNA with base-specific chemical cleavages" Meth. Enzymol. (1980) 65:499-559.

Gill et al., "New developments in chemiluminescence research" Aldrichimica Acta (1983) 16:59-61.

Mellbin, "A chemiluminescence detector for trace determination of fluorescent compounds" J. Liq. Chrom. (1983) 6:1603-1616.

Sanger et al., "DNA sequencing with chain-terminating inhibitors" Proc. Natl. Acad. Sci. USA (1977) 74:5463-5467.

Smith, "DNA sequence analysis by primed synthesis" Meth. Enzymol. (1980) 65:560-580.

Smith et al., "The synthesis of oligonucleotides containing an aliphatic amino group at the 5' terminus: Synthesis of fluorescent DNA primers for use in DNA sequence analysis" Nucl. Acids Res. (1985) 13:2399-2412.

U.S. Patent No. 5,171,534 to Smith et al., (12/15/92).

Japanese Patent Publication No. 59-44648 (03/13/84).

U.S. Patent No. 4,119,521 to Chirikjian (10/10/78).

U.S. Patent No. 4,534,647 to Gross et al., (08/13/85).

U.S. Patent No. 4,151,065 to Kaplan et al., (04/24/79).

U.S. Patent No. 4,318,846 to Khanna et al., (03/09/82).

U.S. Patent No. 4,855,225 to Fung et al., (08/08/89).

U.S. Patent No. 4,711,955 to Ward et al., (12/08/87).

U.S. Patent No. 4,415,732 to Caruthers et al., (11/15/83).

U.S. Patent No. 4,474,948 to Hudson et al., (10/02/84).

U.S. Patent No. 4,483,964 to Urdea et al., (11/20/84).

U.S. Patent No. 4,500,707 to Caruthers et al., (02/19/85).

U.S. Patent No. 4,517,338 to Urdea et al., (05/14/85).

U.S. Patent No. 4,598,049 to Zelinka et al., (07/01/86).

Dörper et al., "Improvements in the phosphoramidite procedure for the synthesis of oligodeoxyribonucleotides" Nucl. Acids Res. (1983) 11:2575-2584.

Langer et al., "Enzymatic synthesis of biotin-labeled polynucleotides: Novel nucleic acid affinity probes" Proc. Natl. Acad. Sci. USA (1981) 78:6633-6637.

Titus et al., "Texas red, a hydrophilic, red-emitting fluorophore for use with fluorescein in dual parameter flow microfluorometric and fluorescence microscopic studies" J. Immunol. Meth. (1982) 50:193-204.

Dialog™ English abstract of Japanese Patent Publication No. 60-161559 (08/23/85). —

Dialog™ English abstract of Japanese Patent Publication No. 60-242368 (12/02/85). —

Dialog™ English abstract of Japanese Patent Publication No. 59-126252 (07/20/84). —

The references listed below were previously disclosed in a Supplemental Information Disclosure Statement dated February 15, 1996, directed to the parent application Serial Number 08/361,176 (filed 12/21/94). Copies of the references were also previously submitted and therefore, copies are not included herewith. This protocol conforms with 37 C.F.R. § 1.97 and M.P.E.P. 609(A)(2). The Examiner is requested to make these references of record in the application. The references include:

Tsuchiya, M., "Fluorescence labelling of DNA and development of a real-time fluorescence detection gel electrophoresis method." Abstract for Master's Thesis, Saitama University (1983). An English translation was previously enclosed.

Kagakukai ed., "Fluorescence tagging" "Biochemistry Experiments Course 2, Nucleic Acid Chemistry III" (1977) pp. 299-317. This reference was brought to applicants' attention in a corresponding foreign application. A complete English translation of this publication is enclosed herewith.

Yang et al., "Studies of transfer RNA tertiary structure by singlet-singlet energy transfer" Proc. Natl. Acad. Sci. USA (1974) 71(7):2838-2842.

Japanese Patent Publication No. 58-502205 (12/22/83). A complete English translation is included herewith. The PCT counterpart of this publication (WO 83/02277, published 07/07/83) was previously submitted in an Information Disclosure Statement dated July 11, 1995, directed to the above-identified application.

Japanese Patent Publication No. 57-209297 (12/22/82). An English abstract and patent family data are included herewith. The Examiner is requested to note that the corresponding U.S. Patent No. 4,711,955 to Ward et al., (12/08/87) was previously submitted in an Information Disclosure Statement dated July 11, 1995, directed to the above-identified application.

Yoshioka et al., "Method for determining a DNA nucleotide sequence. I" Cell Engineering (1982) 1(1):93-101. This reference was brought to applicants' attention in a corresponding foreign application. A complete English translation of this publication is enclosed herewith.

Lee et al., "Transcription of adenovirus type 2 genes in a cell-free system: Apparent heterogeneity of initiation at some promoters" Molecular and Cellular Biology (1981) 1(7):635-651.

Nomiyama et al., "Method for determining a DNA nucleotide sequence. II" Cell Engineering (1982) 1(2):105-115. This reference was brought to applicants' attention in a corresponding foreign application. A complete English translation of this publication is enclosed herewith.

Draper et al., "A method for linking fluorescent labels to polynucleotides: Application to studies of ribosome-ribonucleic acid interactions" Biochemistry (1980) 19(9):1774-1781.

Bauman et al., "A new method for fluorescence microscopical localization of specific DNA sequences by *in situ* hybridization of fluorochrome-labelled RNA" Exp. Cell Res. (1980) 128:485-490.

Douglass et al., "Methods and instrumentation for fluorescence quantitation of proteins and DNA's in electrophoresis gels at the 1 ng level" in Electrophoresis '78, N. Catsimpoolas, ed. (1978) pp. 155-165.

In addition to the references listed above, the following references may be material to the above-identified patent application. Unless otherwise noted, copies of the references are submitted herewith. The Examiner is requested to make these references of record in the application. The references include:

U.S. Patent No. 4,757,141 to Fung et al., (07/12/88).

U.S. Patent No. to 4,849,513 to Smith et al., (07/18/89).

U.S. Patent No. 5,015,733 to Smith et al., (05/14/91).

U.S. Patent No. 5,118,800 to Smith et al., (06/02/92).

U.S. Patent No. 5,118,802 to Smith et al., (06/02/92).

U.S. Patent No. 5,162,654 to Kostichka et al., (11/10/92).

U.S. Patent No. 5,212,304 to Fung et al., (05/18/93).

U.S. Patent No. 5,258,538 to Fung et al., (11/02/93).

U.S. Patent No. 5,366,860 to Bergot et al., (11/22/94).

New European Patent Specification No. 0261283 B2 (04/19/95). The Examiner is requested to note that a copy of the corresponding European Patent Specification No. 0261283 B1 (01/15/92) and the European Patent Application No. 0261283 A1 (03/30/88) are also included herewith.

This Information Disclosure Statement is submitted before receipt of the first Office Action on the Merits. Therefore, applicants believe that no fee is due. However, the Assistant Commissioner is hereby authorized to charge any fees which may be required by this paper to **Deposit Account Number 03-1952.**

Applicants would appreciate the Examiner initialing and returning the Form PTO-1449, indicating that the references have been considered and made of record herein.

This Information Disclosure Statement under 37 C.F.R. § 1.97 is not to be construed as a representation that: (i) a complete search has been made; (ii) additional information material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the above information constitutes prior art to the subject invention.

Dated: March 12, 1996

Respectfully submitted,

By: Sean Brennan
Sean M. Brennan
Registration No. 39,917

Morrison & Foerster LLP
755 Page Mill Road
Palo Alto, California 94304-1018
Telephone: (415) 813-5741
Facsimile: (415) 494-0792